UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I – NEW ENGLAND
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114

FACT SHEET

DRAFT NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0101681**

PUBLIC NOTICE START AND END DATES:

December 28th, 2007 – February 10th, 2008

NAME AND ADDRESS OF APPLICANT:

City of Pittsfield
Department of Public Works
Pittsfield, Massachusetts 01201

The Towns of Dalton, Lenox (North), Hinsdale, and Lanesborough are included as co-permittees for specific activities required by the draft permit. See section VII of this fact sheet and Part I.D. and Part I.E. of the draft permit. The responsible Town departments are:

Town of Dalton	**Town of Lenox**	**Town of Hinsdale**	**Town of Lanesborough**
462 Main Street	**Dept. of Public Works**	**39 South Street**	**83 N. Main Street**
Dalton, MA 01226	**275 Main Street**	**P.O. Box 803**	**Lanesborough, MA 01237**
	Lenox, MA 01240	**Hinsdale, MA 01235**	

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS

Pittsfield Wastewater Treatment Plant
901 Holmes Road
Pittsfield, Massachusetts 01201

RECEIVING WATER: **Housatonic River**

CLASSIFICATION: **B (Warm Water Fishery)**

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I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water, the Housatonic River (**Figure 1)**. The existing permit was issued on October 3, 2000 and expired on December 5, 2005. A timely re-application was submitted and the current permit was administratively continued pursuant to 40 CFR § 122.6. The reissued permit, once it becomes effective, will expire five years from the last day of the month preceding the effective date.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The Pittsfield Wastewater Treatment Plant (WWTP) is an advanced wastewater treatment facility engaged in the collection and treatment of municipal and industrial wastewater. The treated effluent is discharged through a single outfall to the Housatonic River. The entire collection system consists of separate sewers.

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Outfall Location
003	Advanced Wastewater Treatment Plant Effluent	42°24'15"/73°14'30"

III. RECENT PERMITTING HISTORY

-Current permit issued on October 3, 2000
-Current permit expired on December 2, 2005 and administratively continued
-Reapplication for NPDES permit received June 3, 2005

IV. DESCRIPTION OF THE DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in **Appendix A, B, C, and D** of this fact sheet.

V. PERMIT BASIS AND DESCRIPTION OF EFFLUENT LIMITATION DERIVATION

A. PROCESS DESCRIPTION

The Pittsfield Wastewater Treatment Plant is an advanced wastewater treatment facility with a design flow of 17 million gallons per day (MGD), which discharges treated effluent to the Housatonic River. The Towns of Pittsfield, Dalton, Lenox (North), Hinsdale, and Lanesborough contribute flow to the Pittsfield WWTP and are named as co-permittees for Parts I.C. and I.D. of the draft permit (also see Section VII of this fact sheet).

Wastewater treatment at the facility consists of bar screens to remove coarse debris, grit channels that settle out inorganic solids, primary settling basins for removal of the larger and heavier matter, trickling filters, intermediate settling tanks, aeration tanks, sodium aluminate chemical addition for phosphorus removal, secondary clarifiers, chlorine contact chambers, and dechlorination. The treated effluent is then discharged through Outfall 003 to the Housatonic River (**Figures 1 and 2**).

Solids are removed from the primary and secondary clarifiers, and are transported through gravity sludge thickeners, anaerobic digesters, and a belt filter press. After the sludge has been dewatered, it is transported offsite by Synagro of Waterbury, CT for incineration.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Overview of Federal and State Regulations

EPA is required to consider technology and water quality requirements when developing permit limits. Secondary treatment technology guidelines (effluent limits) represent the minimum level of control that must be imposed on Publicly Owned Treatment Works (POTWs) under Sections 301(b) and 402 of the Clean Water Act (CWA). The secondary treatment technology guidelines can be found at 40 CFR Part 133. Since all Clean Water Act statutory deadlines for meeting technology-based guidelines have expired, the deadline for compliance with technology-based effluent limits for Publicly Owned Treatment Works is the date of permit issuance (see also: 40 CFR § 125.3.(a)(1)). Extended compliance schedules can not be authorized by a NPDES permit if the statutory deadlines have passed.

Section 301(b)(1)(C) of the Clean Water Act requires NPDES permits to contain effluent limits more stringent than technology-based limits when more stringent limits are necessary to maintain or achieve water quality standards. Receiving water requirements are established according to numerical and narrative standards adopted under state law. A water quality standard consists of three elements: (1) beneficial designated use or uses for a water body or a segment of a water body; (2) numeric and narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) anti-degradation requirements to assure that existing uses and high-quality waters are protected and maintained.

Pursuant to 40 CFR § 122.44(d), permittees must achieve water quality standards established under Section 303 of the Clean Water Act (CWA), including state narrative criteria for water quality. Additionally, under 40 CFR § 122.44(d)(l)(i), "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." When determining whether a discharge causes, or has the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric criterion, the permitting authority shall use procedures which account for existing controls on point and non-point sources of

pollution, and where appropriate, consider the dilution of the effluent in the receiving water.

2. Water Quality Standards; Designated Use; Outfall 003

The Massachusetts Surface Water Quality Standards found at 314 Code of Massachusetts Regulations (CMR) classifies the segment of the Housatonic River where the Pittsfield WWTP discharge outfall is located (segment MA21-04) as a Class B-Warm Water Fishery (314 CMR § 4.06 Table 3). Class B waters are designated in 314 CMR § 4.05(3)(b) as having the following uses: (1) habitat for fish, other aquatic life, and wildlife; (2) primary and secondary contact recreation; (3) a source of public water supply (i.e. where designated and with appropriate treatment; (4) suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses; and (5) will have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR § 4.02) as "waters in which the maximum mean monthly temperature generally exceeds 68°F (20° C) during the summer months and are not capable of sustaining a year-round population of cold water stenothermal aquatic life".

Sections 305(b) and 303(d) of the CWA requires that states complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires states to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of a total maximum daily load (TMDL). In Massachusetts, these two evaluations have been combined into an Integrated List of Waters. The integrated list format provides the status of all assessed waters in a single, multi-part list. The Massachusetts Year 2006 Integrated List of Waters (303(d) List) lists the segment of the Housatonic River into which the Pittsfield WWTP discharges treated effluent (segment MA21-04) as a Category 5 water (waters requiring a TMDL). The pollutants causing the impairments and requiring a TMDL are listed as priority organics, pathogens, and turbidity.

a. Available Dilution

Water quality-based effluent limitations are established with the use of a calculated dilution factor, based on the available dilution of the effluent. Massachusetts water quality regulations require that the available effluent dilution be based upon the 7 year, 10 day low flow (7Q10 flow) of the receiving water (314 CMR § 4.03(3)(a)). The 7Q10 low flow is the mean low flow over seven consecutive days, recurring every ten years. Additionally, the 30-day, ten year low flow (30Q10 flow) of the receiving water is used in the calculation of water quality-based limitations for parameters such as ammonia (EPA 1999 Update of Ambient Water Quality Criteria for Ammonia).

The 7Q10 and 30Q10 flow data used in the calculation of water quality-based effluent limitations in the draft permit are based on continuous flow data collected in the

Housatonic River upstream from the Pittsfield WWTP by a United States Geological Survey (USGS) flow gage (USGS gaging station number 01197000, East Branch of the Housatonic River at Coltsville, MA). Flows at the USGS gage were then adjusted for the drainage area at the point of discharge (**Table 1**).

The 7Q10 and 30Q10 low flows for the USGS gage number 01197000 are 12.5 and 23.1 cubic feet per second (cfs), respectively, with a drainage area of 57 square miles (mi^2) (USGS gage station No. 01197000; period of record: 1936-2006). These flows were divided by the drainage area at the gage station to derive 7Q10 and 30Q10 flow factors. The flow factors were then multiplied by the drainage area of the Housatonic River at the Pittsfield WWTP (117 mi^2) to determine the 7Q10 and 30Q10 flows (available dilution) at the point of discharge (**Table 1**).

Table 1: Flow Statistics for USGS Gage No. 011970 (Period of Record 1936-2006) and the Pittsfield WWTP

	USGS Gage No. 0119700	**Pittsfield WWTP**
Drainage Area (mi^2)	57	117
7Q10 Flow (cfs)	12.5	25.7
7Q10 Flow Factor (cfs)	0.2193	0.2193
Seasonal (December-April) 30Q10 Flow (cfs)	23.1	47.4
30Q10 Flow Factor (cfs/mi^2)	0.4053	0.4053

The available dilution at the outfall during critical flow conditions (7Q10 and 30Q10 flows) and the design flow of the facility (17 MGD = 26.35 cfs) were then used to calculate the dilution factors used in the calculation of water quality-based effluent limitations as follows:

7Q10 Dilution Factor (DF_{7Q10})

$(DF_{7Q10}) = (7Q10_{Pittsfield\ WWTP} + Design\ Flow_{Pittsfield\ WWTP}) / Design\ Flow_{Pittsfield\ WWTP}$
$(DF_{7Q10}) = (25.7\ cfs + 26.35\ cfs) / 26.35\ CFS$
$(DF_{7Q10}) = 1.97$

30Q10 Dilution Factor (DF_{30Q10})

$DF_{30Q10} = (30Q10_{Pittsfield\ WWTP} + Design\ Flow_{Pittsfield\ WWTP}) / Design\ Flow_{Pittsfield\ WWTP}$
$DF_{30Q10} = (47.4\ cfs + 26.35\ cfs) / 26.35\ cfs$
$DF_{30Q10} = 2.8$

3. Explanation of Effluent Limitations (Outfall 003)

In addition to the State and Federal regulations described above, data submitted by the permittee in their re-application as well as in monthly discharge monitoring reports (DMRs) and in whole effluent toxicity (WET) test reports from 2005 to 2007 was used to evaluate the discharge during the effluent limitation development process (see **Appendix A, B, C**, and **D**).

a. Flow

The average monthly flow limitation of 17.0 MGD in the current permit has been maintained in the draft. This limitation is based upon the 17.0 MGD design flow of the facility as required by 40 CFR § 122.45(b). Flow shall be measured continuously. The permittee shall report the annual average monthly flow using the rolling average method. Additionally, the permittee shall report the average monthly and maximum daily flow.

The maximum daily flow limitation in the current permit has been removed from the draft permit, as it is not required by federal regulation and has not been made a condition for State certification.

b. Conventional Pollutants

1. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

The draft permit includes proposed $CBOD_5$ limitations in accordance with the requirements set forth at 40 CFR §133.102. Pursuant to 40 CFR § 133.102(a)(4), the permitting authority may substitute the BOD_5 limitations set forth within the regulations with $CBOD_5$ limitations. EPA allows the use of $CBOD_5$ limitations in place of BOD_5 limitations to minimize test interference by nitrogenous compounds, which can lead to erroneous BOD_5 test results. The requirements set forth at 40 CFR § 133.102(a)(4)(i) and (ii) state that the average monthly discharge of $CBOD_5$ shall not exceed 25 mg/l, nor shall the average weekly discharge of $CBOD_5$ exceed 40 mg/l.

The $CBOD_5$ limitations and monitoring requirements in the draft permit are the same as those in the current permit, and are therefore consistent with antibacksliding requirements.

Pursuant to 40 CFR §122.45(f), the draft permit also contains average monthly and average weekly mass limitations for $CBOD_5$, which were calculated as follows:

Mass Limitation (lbs/day) = C X DF X 8.34

Where:
C = Concentration limit
DF = Design flow of the facility, in MGD
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Average Monthly Mass Limit = 10 mg/l X 17.0 MGD X 8.34 = 1420 lbs/day

Average Weekly Mass Limit = 10 mg/l X 17.0 MGD X 8.34 = 1420 lbs/day

The mass limitations in the draft permit are the same as those in the current permit and are consistent with antibacksliding requirements.

In accordance with the provisions set forth at 40 CFR § 133.102(a)(4)(iii), the draft permit requires that the 30-day average percent removal of $CBOD_5$ be no less than 85%.

2. Total Suspended Solids (TSS)

The limitations and monitoring requirements for total suspended solids (TSS) in the draft permit are based on the technology-based requirements found at 40 CFR § 133.102(b)(1) and (2). The limits in the draft permit are the same as those in the current permit and are therefore consistent with antibacksliding requirements.

Pursuant to 40 CFR §122.45(f), the draft permit also contains average monthly and average weekly mass limitations for TSS, which were calculated as follows:

Mass Limitation (lbs/day) = C X DF X 8.34

Where:
C = Concentration limit
DF = Design flow of the facility, in MGD
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

Average Monthly Mass Limit = 20 mg/l X 17.0 MGD X 8.34 = 2840 lbs/day

Average Weekly Mass Limit = 25 mg/l X 17.0 X 8.34 = 3550 lbs/day

The TSS mass limitations in the draft permit are the same as those in the current permit and are consistent with antibacksliding requirements.

In accordance with the provisions set forth at 40 CFR § 133.102(b)(3), the draft permit requires that the 30-day average percent removal of TSS be no less than 85%.

3. pH

Historically, MassDEP has required compliance with pH limitations at the end-of-pipe with no allowance for dilution. Therefore, the pH limits proposed in the draft permit are based on State certification requirements for Publicly Owned Treatment Works under Section 401(d) of the CWA, 40 CFR §124.53 and § 124.55. Specifically, the Massachusetts Water Quality Standards for Class B Waters (314 CMR § 4.05 (3)(b)(3)) require the pH to be within the range of 6.5-8.3 Standard Units (SU) and not more than 0.5 Standard Units outside of the natural background range. There shall be no change from the natural background conditions that would impair any use assigned to this Class.

The pH limitations in the draft permit are the same as those in the current permit, and so are consistent with antibacksliding requirements of 40 CFR § 122.44(l) and are at least as stringent as the requirements set forth at 40 CFR § 133.102(c.). The monitoring frequency for pH is set at twice per day in the draft permit.

4. *Escherichia coli (E. coli)*

The *Escherichia coli* (*E. coli*) limits for Outfall 003 are based on state water quality standards for Class B waters (314 CMR 4.05(b)(4)). The State of Massachusetts recently (December 29, 2006) promulgated new bacteria criteria in the Surface Water Quality Standards (314 CMR § 4.00). Fecal coliform bacteria have been replaced by *E. coli* in those standards. These new criteria were approved by EPA on September 19, 2007. Therefore, the draft permit includes *E. coli* limits, with a one year compliance schedule for attaining those limits. After one year, the new *E. coli* limits will go into effect. The permittee shall monitor and report the monthly average and maximum daily discharges of *E. coli* for the first year that the permit is in effect. As discussed below, fecal coliform limits will be in effect during the first year.

The *E. coli* limits proposed in the draft permit for Outfall 003 are 126 colony forming units per 100 ml (cfu/100 ml) geometric monthly mean and 409 cfu/100 ml maximum daily value (this is the 90% distribution of the geometric mean of 126 cfu/100 ml). These limits are seasonal, and the season has been extended from April 1st - October 15th to April 1st - October 31st to fully encompass the contact recreation period. The proposed *E. coli* monitoring frequency in the draft permit is twice per week. The draft permit includes a requirement for the collection of *E. coli* samples with one of the total residual chlorine samples. In addition, during the first year that the permit is in effect, *E. coli* samples shall also be collected concurrently with the fecal coliform bacteria samples.

5. Fecal coliform bacteria

As discussed above, new bacteria criteria have been adopted by MassDEP, and EPA approved these criteria on September 19, 2007. There are no fecal coliform criteria for Class B waters in the Massachusetts Surface Water Quality Standards recently adopted by MassDEP and approved by EPA. EPA and MassDEP believe that a one year compliance schedule for achieving the new *E. coli* limits is reasonable. Therefore, the existing fecal

coliform limits in the current permit are maintained in the draft for the first year that the reissued permit is in effect, whereupon the new *E. coli* limits will go into effect.

The fecal coliform limits in the draft permit are seasonal, and the season has been extended from April 1st- October 15th to April 1st - October 31st to ensure that contact recreation uses are protected. The average weekly fecal coliform bacteria limit that is in the existing permit, which is equivalent to the maximum daily limit, has been removed from the draft since it is not necessary. The draft permit includes a proposed fecal coliform bacteria monitoring frequency of twice per week. The draft permit includes a requirement for the concurrent collection of weekly fecal coliform samples with the *E. coli* samples as well as with one of the total residual chlorine samples.

c. Non-Conventional Pollutants

1. Nitrogen

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen.

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Basin	**Baseline Loading[1] lbs/day**	**TMDL Target[2] lbs/day**	**Current Loading[3] lbs/day**
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading

3. Estimated current loading from 2004 – 2005 DMR data – see **Appendix E**

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH, and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36 percent.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25 % reduction is maintained. Such a requirement has been included in the draft permit. EPA Region I-New England also intends to work with the State of Vermont to ensure that similar requirements are included in its discharge permits.

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 1241 lbs/day (see **Attachment E**). The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

The agencies will annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

The draft permit maintains the average monthly and maximum daily reporting requirements for total nitrogen, nitrite, nitrate, and Kjeldahl nitrogen that are in the current permit.

Ammonia-nitrogen

The draft permit maintains the ammonia-nitrogen limitations and monitoring requirements in the current permit, which are based on water quality standards, and are therefore consistent with antibacksliding requirements. The seasonal ammonia-nitrogen limitations will ensure that the receiving water will be protected from the toxicity associated with discharges of ammonia, and the increase in oxygen demand resulting from nitrification during the months of the year when instream temperatures are expected to be higher and receiving water flows lower. Effluent data from 2005-2007 indicate that the Pittsfield WWTP is performing properly so as to minimize the quantity of ammonia in the discharge and that they have consistently met the limits in the current permit (see **Appendix B**).

Winter ambient ammonia criteria are dependent on the temperature and pH of the receiving water, as described in the EPA 1999 Update of Ambient Water Quality Criteria for Ammonia. Using a critical instream temperature of 10°C and a critical instream pH of 7.4, the chronic winter ammonia criteria (for fish early life stages absent) in the Housatonic River was determined to be 6.33 mg/l. Using this criteria and the 30Q10 dilution factor (DF_{30Q10}) of 2.8, the average monthly winter ammonia-nitrogen limitation was calculated to be 17.7 mg/l using the following equation (see **Table 1** for explanation of flow and dilution factor calculations):

Monthly Average Winter $N\text{-}NH_3$ Limit ($N\text{-}NH_3$)
$N\text{-}NH_3$ = Chronic Ammonia Criterion X DF_{30Q10}
$N\text{-}NH_3$ = 6.33 mg/l X 2.8 = 17.7 mg/l

Effluent monitoring data from 2005-2007 was used to estimate the current instream ammonia nitrogen concentration downstream of the Pittsfield WWTP, which was then compared to the criteria in order to determine whether there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria during the winter months (October 1st - March 31st). During the 2005 through 2007 winter periods, average monthly discharges of ammonia-nitrogen ranged from a minimum of 0.02 mg/l to a maximum of 0.56 mg/l, and averaged 0.145 mg/l (see **Appendix B**). The maximum daily concentration of ammonia-nitrogen in the discharge ranged from 0.02 mg/l to 0.56 mg/l, and averaged 0.147 mg/l (see **Appendix B**). The results of upstream ammonia analyses conducted on dilution water samples used for whole effluent toxicity testing in December of 2005 and 2006 and March of 2005, 2006, and 2007 indicate an average ambient ammonia concentration of 0.04 mg/l. This value was used along with the maximum concentration of ammonia discharged from the facility during the 2005-2007 winter periods, the design flow of the facility, and the 30Q10 flow of the receiving water to estimate the downstream ammonia-nitrogen concentration as follows:

$$C_r = C_sQ_s + C_dQ_d / Q_r$$

Where:

Q_r = receiving water flow downstream of the discharge (Qd + Qs)
C_r = concentration of nitrogen in the receiving water downstream of the discharge

Q_d = design flow of the facility
C_d = nitrogen concentration in the discharge
Q_s = receiving water flow upstream of the discharge (30Q10 flow)
C_s = nitrogen concentration upstream of the discharge

Q_s = 47.4 cfs
C_s = 0.04 mg/l
C_d = 0.56 mg/l
Q_d = 26.35 cfs
Q_r = (26.4 cfs + 25.7 cfs) = 52.1 cfs

C_r = (0.04 mg/l)(47.4 cfs) + (0.56 mg/l)(26.35)/52.1 cfs = 0.32 mg/l

The resulting estimated downstream ammonia-nitrogen concentration of 0.32 mg/l is below the criteria of 6.33 mg/l, indicating that reasonable potential does not exist for this discharge to cause or contribute to an exceedance of water quality criteria. Therefore, winter ammonia-nitrogen limits are not proposed in the draft permit. The winter (October 1st - March 31st) ammonia-nitrogen monitoring requirement in the current permit has been continued in the draft.

3. Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, in high quantities it stimulates rapid plant growth in freshwater ecosystems. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by (1) increasing the oxygen demand within the water body (both to support plant respiration and to allow for the biological breakdown of dead organic (plant) matter); (2) causing an unpleasant appearance and odor; (3) interfering with navigation and recreation; (4) reducing water clarity; and (5) reducing the quality and availability of suitable habitat for aquatic life. Cultural or accelerated eutrophication is the term used to describe excessive inputs of nutrients into a water body that are the result of human activities. Discharges from wastewater treatment plants, agricultural runoff, and stormwater are examples of human-derived sources of nutrients in surface waterbodies.

The Massachusetts Water Quality Standards do not contain numerical criteria for phosphorus. The narrative criterion for nutrients found at 314 CMR § 4.05(5)(c) states that nutrients "shall not exceed the site-specific limits necessary to control accelerated or cultural eutrophication". The Massachusetts Water Quality Standards also require that

"any existing point source discharges containing nutrients in concentrations which encourage eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the highest and best practicable treatment to remove such nutrients" (314 CMR § 4.05(5)(c)). MassDEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents the highest and best practical treatment for POTWs.

In the absence of numeric criteria for phosphorus, EPA uses nationally-recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents which contain recommended in-stream criteria for total phosphorus. EPA's 1986 Quality Criteria for Water (the "Gold Book") recommends that instream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released recommended ecoregional nutrient criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from cultural eutrophication. Pittsfield is located within Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criterion for this ecoregion, found in Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (2000), is 24 µg/l (0.024 mg/l).

The current permit contains average monthly, average weekly, and maximum daily total phosphorus effluent limitations from April 1st- April 30th (2.0 mg/l, 2.0 mg/l, and 3.0 mg/l, respectively) and from May 1st- August 30th (1.0 mg/l, 1.0 mg/l, and 1.5 mg/l, respectively). An average monthly and maximum daily reporting requirement is currently in effect from September 1st- March 31st. The concentration of Phosphorus in the Pittsfield WWTP's effluent from 2005-2007 is summarized in **Table 2** (data taken from monthly effluent monitoring reports submitted by the permittee; (also see **Appendix C**).

Table 2: Discharges of Phosphorus from the Pittsfield WWTP (2005-2007)

Date	Average Monthly (mg/l)	Average Weekly (mg/l)	Maximum Daily (mg/l)
April 1st-April 30th	0.71-1.19 (0.9)	0.83-1.29 (1.05)	0.83-1.31 (1.06)
May 1st-August 30th	0.78-0.87 (0.83)	0.85-0.97 (0.90)	0.86-1.03 (0.94)
Sept. 1st-March 31st	0.66-1.32 (0.90)	———	0.66-1.32 (0.90)

Note: Minimum-Maximum values shown. Values in parentheses are averages.

Elevated concentrations of chlorophyll *a*, excessive algal and macrophyte growth, and low dissolved oxygen levels are all effects of nutrient enrichment. The relationship between these factors and high concentrations of phosphorus is well documented in scientific literature, including guidance developed by EPA to address nutrient overenrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams, EPA July 2000 (EPA-822-B-00-002)). Samples collected upstream from the Pittsfield WWTP contained chlorophyll *a* concentrations of 3.3 µg/l (July 2002) and 2.2 µg/l (September 2002), while samples collected on the same dates from an impoundment downstream of the facility (Woods Pond) contained chlorophyll *a* concentrations as high as 23.0 µg/l (July 2002) and 24.2 µg/l (September 2002) (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report). The MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report also cites the presence of dense assortments of aquatic macrophytes and phytoplankton as well as dense algal growth in Woods Pond. The elevated chlorophyll *a* measurements and excessive plant growth observed in Woods Pond are indicative of nutrient enrichment. A review of the total phosphorus data for samples collected by MassDEP in 2002 upstream from the Pittsfield WWTP found in-stream total phosphorus concentrations as high as 0.096 mg/l (July 2002) and 0.202 mg/l (September 2002) (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report). Measurements of flow in the Housatonic River collected by the USGS gage No. 01197000 (East Branch of the Housatonic River, Coltsville, MA) show that the receiving water flows on the dates that these samples were collected were close to the 7Q10 flow of 12.5 cfs for that station (21 cfs on July 2002 and 14 cfs on September 2002), meaning that these samples are representative of critical conditions (MassDEP 2002 Housatonic River Watershed Water Quality Assessment Report).

Further downstream in Connecticut, Chlorophyll *a*, nutritent/eutrophication, excessive algal growth, and taste/odor are described as causing an impairment of recreational uses in Lake Lillinoah, in the State of Connecticut's 2006 Integrated Water Quality Report to Congress. Sources potentially contributing these pollutants include agriculture, unspecified urban stormwater, non-point sources, and municipal point source discharges (CT DEP 2006 Integrated Water Quality Report to Congress).

The effectiveness of the current seasonal average monthly low limit of 1.0 mg/l (May 1st - August 30th) in protecting the quality of the receiving water was evaluated by estimating the instream phosphorus concentration downstream from the discharge under critical flow conditions using a background phosphorus concentration (C_s) of 0.149 mg/l (this is the average of the 2002 sample results), the lowest average monthly phosphorus limit (C_d = 1.0 mg/l), the 7Q10 flow of the receiving water (Q_s = 25.7 cfs), the design flow of the facility (Q_d = 17.0 MGD = 26.35 cfs), and the receiving water flow downstream of the discharge ($Q_r = Q_d + Q_s$ = 52.1 cfs) as follows:

$$C_r = Q_sC_s + Q_dC_d / Q_r$$

$$C_r = (25.7 \text{ cfs})(0.149 \text{ mg/l}) + (26.35 \text{ cfs})(1.0 \text{ mg/l}) / 52.1 \text{ cfs} = 0.579 \text{ mg/l}$$

The result of this calculation shows that because the upstream phosphorus concentration exceeds the Gold Book recommended criteria, the current discharge would be expected to result in a downstream concentration of approximately 0.579 mg/l, which greatly exceeds both the ecoregional criteria of 0.024 mg/l and the Gold Book criteria of 0.1 mg/l.

Given the high upstream phosphorus concentration and lack of dilution under 7Q10 conditions, and in response to the negative effects of nutrient enrichment observed in Woods Pond, a water quality-based total phosphorus limit of 0.1 mg/l has been proposed in the draft permit to ensure that the discharge does not cause or contribute to an exceedance of the Gold Book criteria of 0.1 mg/l in the receiving water. This limitation is in effect from April 1st - October 31st in order to provide maximum protection of the receiving water during the entire growing season. This seasonal limit is defined as a 60 day rolling average limit. The 60 day average value for each day in a given month, beginning on the 60th day after April 1st, must be calculated and the highest 60 day average value for that month must be reported on the monthly discharge monitoring report (DMR). In addition, the maximum daily value for each month must be reported.

A four-year compliance schedule for the permittee to come into compliance with the new 0.1 mg/l summer period (April 1st October 31st) phosphorus limit is included in the draft permit (one year each for the planning and design of necessary facility upgrades and two years for the construction of necessary upgrades and for achieving the new limits). During this four-year period, the permittee shall achieve the following total phosphorus limitations from April 1st-October 31st: 1.0 mg/l average monthly, 1.0 mg/l average weekly, and 1.5 mg/l maximum daily. Monitoring for total phosphorus shall be conducted at the frequency specified in Part I.A.1.a. of the draft permit (See Part I.B. of the draft permit, Schedule of Compliance).

The draft permit also contains a winter period (November 1st- March 31st) average monthly total phosphorus limitation of 1.0 mg/l. This limit is necessary to ensure that higher levels of phosphorus discharged in the winter do not result in the accumulation of phosphorus in the downstream sediments. This limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction, and that the dissolved phosphorus will pass through the system given the short detention time of the impoundments and the lack of plant growth during the winter period.

Because the proposed winter phosphorus limit is new for this facility, the draft permit allows the permittee a schedule of one year from the effective date of the permit to come into compliance with the new winter period phosphorus limit (see Part I.B. of the draft permit, Schedule of Compliance). During the first year that the permit is in effect, the permittee shall report the average monthly total phosphorus concentration during the winter period (November 1st-March 31st).

The draft permit also includes a monitoring requirement for ortho-phosphorus during the winter period (November 1st- March 31st). Monitoring for ortho-phosphorus is necessary to identify whether the particulate fraction remains low and to further understand the physical dynamics of phosphorus in the non-growing season.

4. Dissolved Oxygen

The draft permit maintains the seasonal dissolved oxygen limitation in the current permit to ensure that that the discharge does not contribute to low concentrations of dissolved oxygen in the receiving water during the growing season, when there is a greater oxygen demand and less available dissolved oxygen within the river due to elevated instream temperatures and lower flows. This period has been extended in the draft permit from April 1st - October 15th to April 1st- October 31st to ensure protection of water quality criteria during the entire growing season. The permittee shall monitor dissolved oxygen once per day. The dissolved oxygen concentration of the effluent shall be greater than or equal to 6.0 mg/l.

d. Toxics Control

1. Total Residual Chlorine (TRC)

Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The total residual chlorine (TRC) limitations proposed in the draft permit are based upon the State Water Quality Standards found at 314 CMR § 4.05(5)(e), and the State's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990). To be consistent with other POTWs that discharge to the Housatonic River and to fully encompass the entire contact recreation period, the season that the TRC limitations and monitoring requirements are in effect has been extended in the draft permit from April 1st- October 15th to April 1st - October 31st.

The water quality criteria established for chlorine in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 µg/l daily maximum (acute) and 11 µg/l average monthly (chronic). TRC effluent limitations for the Pittsfield WWTP are based on the available dilution at the outfall location and the national recommended water quality criteria for TRC. The TRC limits in the draft permit were calculated to be 26.7 µg/l average monthly and 37.4 µg/l maximum daily using the following equations:

Monthly Average TRC Limit = Chronic Criteria X Dilution Factor
= 11 µg/l X 1.97 = 21.7 µg/l (0.02 mg/l)

Maximum Daily TRC Limit = Acute Criteria X Dilution Factor
= 19 µg/l X 1.97 = 37.4 µg/l (0.04 mg/l)

The twice-per-day monitoring frequency for TRC in the current permit has been maintained in the draft. The draft permit requires that the twice per week bacterial samples be collected with two of the TRC samples.

2. Metals (Aluminum, Copper, Lead, and Zinc)

The Massachusetts Surface Water Quality Standards include requirements for the regulation and control of toxic constituents and also require that EPA criteria established pursuant to Section 304(a) of the CWA shall be used unless site-specific criteria are established.

In evaluating the reasonable potential for the Pittsfield WWTP discharge to cause or contribute to an excursion above any State water quality standard for a particular metal, a permissible effluent concentration was calculated based on an allowable receiving water concentration (criteria) and the available dilution at the point of discharge. The following equation was used in the calculation of an allowable concentration of a particular metal in the effluent:

$C_d = C_r$ X DF

Where:

C_d = Allowable concentration of a particular pollutant in the effluent
C_r = Allowable in-stream concentration of a pollutant
DF = Dilution factor (available dilution at the point of discharge)

Metals data submitted by the permittee along with the results of chemical analyses performed in conjunction with the whole effluent toxicity (WET) tests from March 2005-March 2007 (see **Appendix D**) were then compared to the calculated allowable effluent concentration. If the effluent monitoring data revealed discharges of a particular metal in concentrations exceeding the calculated allowable effluent concentration, then reasonable potential exists for this discharge to cause or contribute to an excursion above a State water quality standard. In this case, a limit equal to the allowable effluent concentration would be incorporated into the permit. The following sections illustrate the process used to determine whether or not effluent limitations for aluminum, copper, lead, and zinc needed to be included in the draft permit.

Aluminum

The following criteria from the EPA 2002 National Recommended Water Quality Criteria were used in the calculation of permissible effluent concentrations of aluminum:

Criteria Maximum Concentration (CMC) = 750 µg/l
Criteria Chronic Concentration (CCC) = 87 µg/l

Using the above criteria and the calculated dilution factor of 1.97, allowable concentrations of aluminum that can be discharged from the Pittsfield WWTP to the receiving water were determined as follows:

Allowable Acute Effluent Concentration

C_d = CMC X DF

= 750 µg/l X 1.97 = 1478 µg/l = 1.5 mg/l

Allowable Chronic Effluent Concentration

C_d = CCC X DF
= 87 µg/l X 1.97 = 171 µg/l = 0.171 mg/l

A review of aluminum data submitted with WET test reports from March 2005 to March 2007 found concentrations of aluminum in the Pittsfield WWTP's effluent ranging from a minimum of 0.100 mg/l to a maximum of 0.410 mg/l, with the average concentration being 0.211 mg/l (see **Appendix D**). Because these concentrations exceed the calculated allowable chronic effluent concentration, reasonable potential exists for this discharge to cause or contribute to an excursion above water quality standards. As a result, a chronic effluent limitation of 0.171 mg/l has been included in the draft permit. In addition, the permittee shall report the maximum daily concentration of aluminum. The proposed monitoring frequency is set at once per month.

Hardness-dependent Metals (Copper, Lead, and Zinc)

Water Quality Criteria for copper, lead, and zinc are dependent upon the hardness of the water in which the criteria are being applied. Increasing hardness of the water acts to reduce the toxicity of these metals.

Zinc

An instream hardness value of 137 mg/l was used in the calculation of acute and chronic water quality criteria for zinc. This value is the average of the instream hardness values of samples collected in the Housatonic River upstream from the discharge for use as dilution water for the June 2005, September 2005, June 2006, and September 2006 whole effluent toxicity (WET) tests (**Appendix D**). Hardness values of samples collected in these months were used since these are the months when the receiving water typically experiences the lowest flows. Therefore, the results are more representative of critical flow conditions.

The following equations from the EPA 2002 National Recommended Water Quality Criteria were used to determine acute and chronic zinc criteria for the receiving water. (Note: Values for the pollutant-specific coefficients and conversion factors were taken from **Appendix B** of the EPA 2002 National Recommended Water Quality Criteria):

1. Acute Criteria$_{(Dissolved)}$ = exp{m_a [ln(h)] + b_a}* CF[1]

   Where:

   CF = Pollutant-specific conversion factor used to convert total recoverable metals dissolved metals

   m_a = Pollutant-specific coefficient
   b_a = Pollutant-specific coefficient
   ln = Natural logarithm
   h = hardness of the receiving water

2. Chronic Criteria$_{(Dissolved)}$ = exp{m_c [ln(h)] + b_c}* CF

   Where:
   CF = Pollutant-specific conversion factor used to convert total recoverable to dissolved metals

   m_c = Pollutant-specific coefficient
   b_c = Pollutant-specific coefficient
   ln = Natural logarithm
   h = hardness of the receiving water

Once pollutant-specific water quality criteria were calculated, allowable acute and chronic effluent concentrations were calculated by multiplying the criteria by the available dilution as follows:

Calculation of Acute Water Quality Criteria and Allowable Effluent Concentration for Zinc:

m_a = 0.8473 b_a = 0.884 CF = 0.978 h = 137

Acute Criteria$_{(Dissolved)}$ = exp{0.8473 [ln(137)] + 0.884} * 0.978 = 153 µg/l

Dilution Factor = 1.97
Acute Allowable Concentration$_{(Dissolved)}$ = 153 µg/l * 1.97 = 301.4 µg/l
Acute Allowable Concentration$_{(Total\ Recoverable)}$ = 301.4 µg/l / 0.978 = 308 µg/l (0.308 mg/l)

[1] EPA Metal Translator Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criteria (EPA-823-B96-007) was used as the basis for the use of the criteria conversion factor (CF). National Guidance requires that permit limits for metals are to be expressed in terms of total recoverable metal and not dissolved metal. As such, conversion factors are used to develop total recoverable limits from dissolved criteria. The conversion factor reflects how the discharge of a particular metal partitions between the particulate and dissolved form after mixing with the receiving water. In the absence of site-specific data describing how a particular discharge partitions in the receiving water, a default assumption equivalent to the criteria conversion factor is used in accordance with the Metal Translator Guidance.

Calculation of Chronic Water Quality Criteria and Allowable Effluent Concentration for Zinc:

$m_c = 0.8473$ $b_c = 0.884$ CF = 0.986 h = 137

Chronic $Criteria_{(Dissolved)} = \exp\{0.8473\ [\ln(137)] + 0.884\} * 0.986 = 154.3\ \mu g/l$

Dilution Factor = 1.97
Chronic Allowable $Concentration_{(Dissolved)} = 154.3\ \mu g/l * 1.97 = 304\ \mu g/l$
Chronic Allowable $Concentration_{(Total\ Recoverable)} = 304\ \mu g/l / 0.986 = 308\ \mu g/l$
$= (0.308\ mg/l)$

A review of WET test reports submitted by the permittee from January 2005-March 2007 found concentrations of zinc in the effluent ranging from a minimum of below 0.01 mg/l to a maximum of 0.036 mg/l, with the average concentration being 0.025 mg/l (see **Appendix D**). These values are below the calculated allowable effluent concentrations, and therefore no reasonable potential exists for this discharge to cause or contribute to an exceedance of water quality criteria. Effluent limitations for zinc are not proposed in the draft permit. The permittee shall continue to monitor for zinc as part of their whole effluent toxicity (WET) testing.

Copper

The current permit contains an average monthly total recoverable copper limitation of 16.7 µg/l and a maximum daily total recoverable copper limitation of 24.9 µg/l. These limits were calculated based on the EPA 2002 National Recommended Water Quality Criteria for Copper and a hardness value of 90 mg/l as $CaCo_3$, which resulted in a total recoverable acute criterion of 12.67 µg/l and a total recoverable chronic criterion of 8.52. These criteria were then multiplied by the calculated available dilution (1.97) to derive the current limits.

The Massachusetts Surface Water Quality Standards were revised in December 2006 to include site-specific criteria that were developed for receiving waters where national criteria are invalid due to site-specific physical, chemical, or biological considerations, and do not exceed the safe exposure levels determined by toxicity testing (314 CMR 4.05(5)(e) Table 28). EPA approved these criteria on March 26, 2007. MassDEP has adopted acute dissolved copper criteria of 25.7 µg/l (26.8 µg/l total recoverable) and chronic dissolved copper criteria of 18.1µg/l (18.9 µg/l total recoverable) for the Housatonic River.

Antibacksliding requirements found in at CWA § 402 (o) and 40 CFR §122.44(l) generally prohibit relaxation of effluent limits. Water quality-based effluent limits can only be relaxed if the requirements of CWA § 303(d)(4) are met. Section 303(d)(4) of the CWA requires that a determination be made as to whether the receiving water is attaining the applicable water quality standard. If the receiving water is not in attainment of the applicable standard, the existing limit must be based on a wasteload allocation or a total

maximum daily load, and the relaxed limit is only allowed if attainment of water quality standards is ensured.

If the water is in attainment of the standard, a relaxation of the limit may be allowed subject to the state antidegradation policy, which requires that high quality waters (those in attainment of water quality standards for the pollutant in question) be maintained at existing quality.

Therefore, in order to relax the copper limit in the permit a determination must first be made as to whether or not the receiving water is currently attaining the new water quality criteria under critical conditions. That has been calculated below, based on the receiving water concentration of copper, the concentration of copper in the discharge, the 7Q10 receiving water flow, and the treatment plant design flow.

Calculation of Existing Instream Concentration

The existing instream copper concentration downstream of the discharge that can be expected under critical flow conditions was estimated using a background copper concentration equal to one-half of the minimum level (ML) for the Inductively Coupled Plasma analytical method (the available upstream data, collected in conjunction with whole effluent toxicity tests, showed consistent non-detectable concentrations of copper using the described method), the maximum concentration of copper in the discharge from 2005-2007, the design flow of the facility, and the 7Q10 flow of the receiving water. The following equation was used in this calculation:

$$Q_rC_r = Q_dC_d + Q_sC_s$$

Where:
Q_r = receiving water flow downstream of the discharge (Qd + Qs)
C_r = copper concentration in the receiving water downstream of the discharge
Q_d = design flow of the facility
C_d = copper concentration in the discharge
Q_s = receiving water flow upstream of the discharge (7Q10 flow)
C_s = copper concentration upstream of the discharge

Effluent monitoring data submitted by the permittee from January 2005 through April 2007 show that the concentration of copper in the discharge averaged 11.0 µg/l, with the maximum daily concentration discharged being 15.8 µg/l (see **Appendix D**).

Using the design flow of the facility (Q_d = 17.0 MGD = 26.35 cfs), the maximum concentration of copper discharged from the facility (C_d = 15.8 µg/l), an upstream copper concentration equal to one-half of the ML (C_s = ½ * 5.0 µg/l = 2.5 µg/l), the 7Q10 flow (Q_s = 25.7 cfs) and the downstream flow (Q_r = 52.1 cfs), the resulting instream copper concentration downstream of the discharge was estimated to be 9.22 µg/l as follows:

$$C_r = Q_sC_s + Q_dC_d / Q_r$$

Where:
Q_s = 25.7 cfs
C_s = 2.5 µg/l
Q_d = 26.35 cfs
C_d = 15.8 µg/l
Q_r = 52.1 cfs

C_r = [(25.7 cfs)(2.5 µg/l) + (26.35 cfs)(15.8 µg/l)] /(52.1 cfs)
Cr = 9.22 µg/l (total recoverable)
8.85 µg/l (dissolved)

Therefore, under critical flow conditions, the existing discharge would not result in an exceedance of either the chronic or acute site-specific copper criteria.

As described above, the average discharge concentration reported over the months of January 2005 through April 2007 was 11 µg/l and the maximum daily concentration was 15.8 µg/l, with the values ranging from 4.8 µg/l to 15.8 µg/l, indicating that the facility has been able to consistently achieve compliance with the existing permit limits (see **Appendix D**). Therefore, based on the State's antidegradation policy, the copper limitations in the current permit have been maintained in the draft.

Lead

More data is needed to make a determination as to whether or not the discharge has the potential to cause or contribute to an excursion of water quality criteria for lead. Therefore, the draft permit includes a monthly monitoring requirement for lead.

3. Whole Effluent Toxicity

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards, found at 314 CMR § 4.05(5)(e), include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria:

> *All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. Where the State determines that a specific pollutant not otherwise listed in 314 CMR 4.00 could reasonably be expected to adversely affect existing or designated uses, the State shall use the recommended limit published by EPA pursuant to 33 U.S.C. 1251 § 304(a) as the allowable receiving water concentrations for the affected waters unless a site-specific limit is established. Site-specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).*

National studies conducted by the EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons, and others. Based on the potential for toxicity from domestic and industrial contributions, the State narrative water quality criterion, the level of dilution at the discharge location, and in accordance with EPA national and regional policy and 40 CFR § 122.44(d), the draft permit includes both acute (LC_{50}) and chronic (C-NOEC) whole effluent toxicity (WET) limitations. (See also "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 49 Fed. Reg. 9016 March 9, 1984, and EPA's "Technical Support Document for Water Quality-Based Toxics Control", March 1991.)

The Massachusetts Department of Environmental Protection's Division of Watershed Management has a current toxics policy which requires toxicity testing for all major dischargers such as the Pittsfield POTW (Implementation Policy for the Control of Toxic Pollutants in Surface Waters, MassDEP 1990). In addition, EPA feels that toxicity testing is required to assure that the synergistic effect of the pollutants in the discharge do not cause toxicity, even though the pollutants may be at low concentrations in the effluent. The inclusion of whole effluent toxicity limitations in the draft permit will assure that the Pittsfield POTW does not discharge combinations of toxic compounds into the Housatonic River in amounts which would affect human or aquatic life.

Pursuant to EPA Region I Policy, and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 1990), dischargers having a dilution factor less than 10:1 are required to conduct chronic (and modified acute) toxicity testing four times per year. This requirement has been included in the draft permit. In accordance with the above guidance, the draft permit includes an acute toxicity limit (LC_{50}) of $\geq$ 100% and a chronic toxicity limit (chronic no observable effect concentration (C-NOEC)) of $\geq$ 50%. The C-NOEC limit was derived by taking the inverse of the calculated 7Q10 available dilution ([1/1.97] X 100% = 50%). The permittee shall conduct 7-Day chronic (and modified acute) toxicity tests using the daphnid, *Ceriodaphnia dubia* (*C. dubia*), as the test species. Toxicity testing shall be conducted four times per year, during the second week of the months of January, April, July, and October. Toxicity testing is currently conducted during the months of March, June, September, and December. The intent of the proposed change in the current whole effluent toxicity testing schedule is so that there is consistency amongst the scheduling of WET testing conducted by dischargers within the Housatonic River basin. Toxicity testing must be performed in accordance with the EPA Region I test procedures and protocols specified in **Appendix A** of the draft permit (Freshwater Chronic Toxicity Procedure and Protocol).

VI. SLUDGE CONDITIONS

Section 405(d) of the CWA requires that EPA develop technical standards regarding the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical

standards which are to be implemented through NPDES permits. The conditions in the draft permit satisfy this requirement.

VII. INFILTRATION/INFLOW (I/I)

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses of secondary treatment. It greatly increases the potential for sanitary sewer overflows in separate systems, and combined sewer overflows in combined systems.
The draft permit contains requirements for the permittee and co-permittees to control infiltration and inflow (I/I) into the separate sewer collection systems they own and operate. The permittee and co-permittees shall each develop an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

The standard permit conditions for "Proper Operation and Maintenance", set forth at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and associated facilities to achieve permit conditions. The requirements at 40 CFR § 122.41(d) impose a "duty to mitigate" upon the permittee and co-permittees, which requires that "all reasonable steps be taken to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment". EPA and MassDEP maintain that an I/I removal program is an integral component to ensuring compliance with the requirements of the permit under the provisions at 40 CFR § 122.41(d) and (e).

VIII. DEVELOPMENT OF LIMITATIONS FOR INDUSTRIAL USERS

The permittee is required to identify, in terms of the character and volume of pollutants, any significant indirect dischargers into the POTW subject to pretreatment standards under Section 307(b) of the CWA.

IX. INDUSTRIAL PRETREATMENT PROGRAM

The Pittsfield WWTP currently has an approved pretreatment program that it is required to administer under the authority granted under 40 CFR § 122.44(j), 40 CFR § 403 and Section 307 of the CWA. In accordance with 40 CFR § 403, the permittee is obligated to modify, if necessary, its pretreatment program plan, to be consistent with current Federal Pretreatment Regulations. The permittee is also required to implement its pretreatment program in accordance with the requirements found at 40 CFR Part 403 (General Pretreatment Regulations). These requirements are necessary to ensure continued compliance with the facility's NPDES permit and its sludge use or disposal practices. Those activities that the permittee must perform include, but are not limited to, the

following: (1) develop and enforce EPA-approved specific effluent limits (technically-based local limits); (2) issue industrial user discharge permits; (3) conduct compliance monitoring activities (e.g., sampling and inspections at industrial users); and (4) initiate enforcement actions against non-complying industrial users.

The draft permit requires the permittee to submit to EPA, within 90 days of the effective date of the permit, all required modifications of the Streamlining Rule in order to be consistent with the provisions of the newly promulgated rule. To the extent that the permittee's legal authority is not consistent with the required changes, they must be revised and submitted to EPA for review.

Lastly, the permittee must submit an annual pretreatment report by **October 31st**, which describes the permittee's pretreatment program activities over its pretreatment reporting period of September 1st-August 31st.

X. ESSENTIAL FISH HABITAT DETERMINATION (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnusun-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," (16 U.S.C. § 1855(b)).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," (16 U.S.C. § 1802(10)). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Housatonic River is not covered by the EFH designation for riverene systems and thus EPA and MassDEP have determined that a formal EFH consultation with NMFS is not required.

XI. ENDANGERED SPECIES ACT (ESA)

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended (the "Act"), grants authority to and imposes requirements upon Federal agencies regarding threatened or endangered species of fish, wildlife, or plants ("listed species") and habitat of such species that have been designated as critical ("critical habitat").

Section 7(a)(2) of the Act requires every Federal agency in consultation with and with the assistance of the Secretary of the Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. EPA and the MassDEP have determined that an ESA consultation is not required for this discharge, since no listed species or critical habitat are located in an area that could be affected by the Pittsfield WWTP's discharge.

The permittee should contact the State regarding a Massachusetts Natural Heritage and Endangered Species Program (NHESP) review.

XII. MONITORING AND REPORTING

The permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified in the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

XIII. STATE PERMIT CONDITIONS

The NPDES permit is issued jointly by the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under Federal and State law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the Director of the Division of Watershed Management pursuant to M.G.L. Chap. 21, § 43.

XIV. GENERAL CONDITIONS

The general conditions of the permit are based on 40 CFR Parts 122, Subparts A and D and 40 CFR § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

XV. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection (MassDEP) has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

XVI. PUBLIC COMMENT PERIOD AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, Municipal Permits Branch (CMP), One Congress

Street, Suite 1100, Boston, Massachusetts 02114. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests will state the nature of the issues proposed to be raised in the hearing. Public hearings may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicate a significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office.

Following the close of the comment period, and after a public hearing, if such a hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

XVII. EPA AND MASSDEP CONTACTS

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

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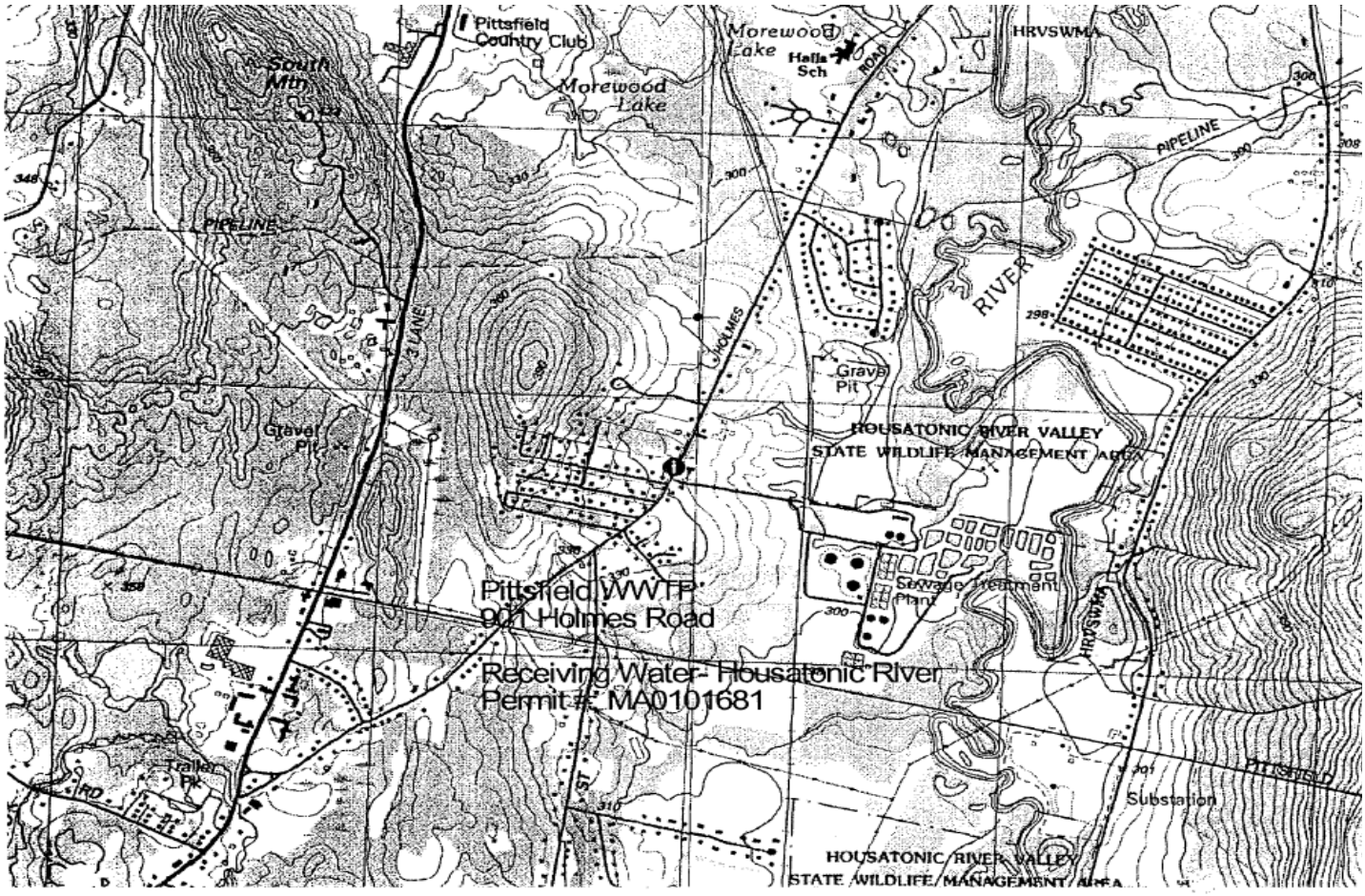

Figure 1: Site Map of the Pittsfield WWTP

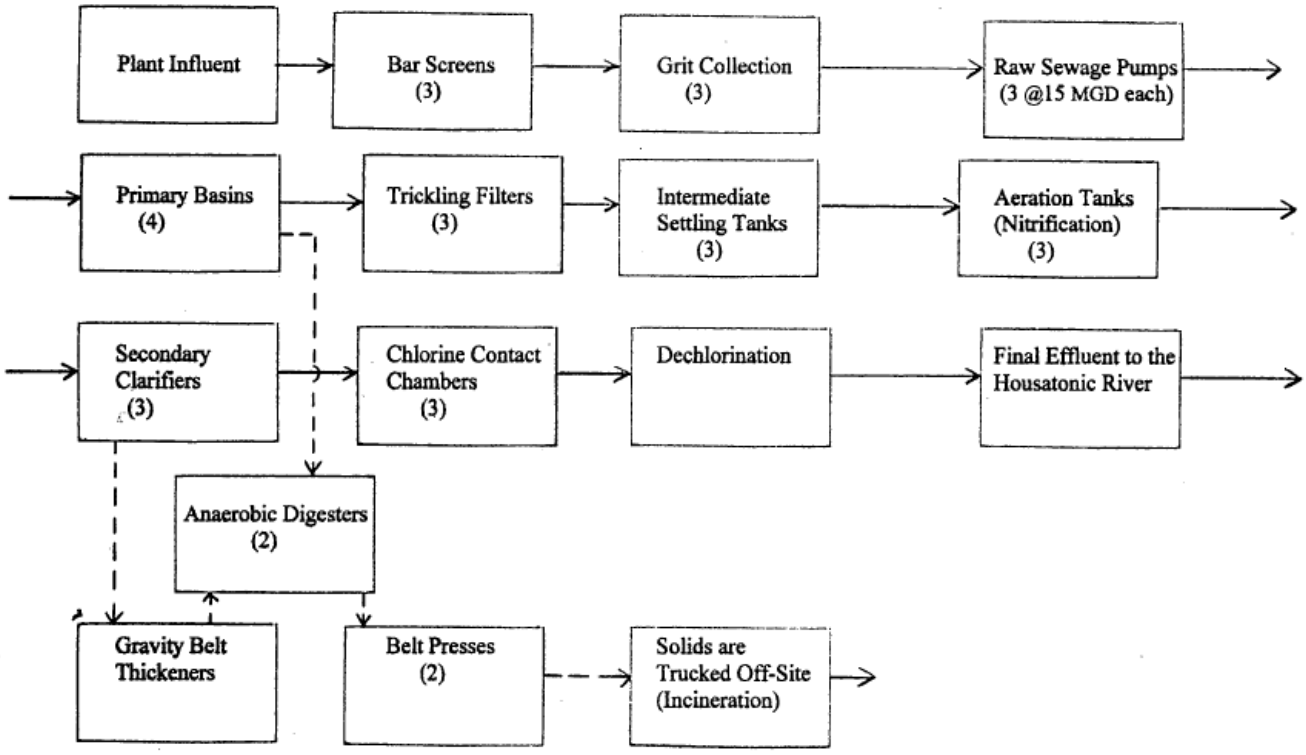

Figure 2: Process Flow Diagram

Appendix A
2005-2007 Effluent Data - Conventional Pollutants

Date	Flow (MGD)		$CBOD_5$ (mg/l)			TSS (mg/l)			pH (SU)		Fecal Coliform Bacteria (April 1-Oct. 15) (cfu/100 ml)		
	Avg.Monthly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Minimum	Maximum	Avg.Monthly	Avg.Weekly	Max.Daily
Existing Limits	**17.0**	**28.7**	**10**	**10**	**Report**	**20**	**25**	**Report**	**6.5**	**8.3**	**200**	**400**	**400**
Jan. 2005	12.1	21.5	1.3	1.5	1.8	5.3	6.1	7.1	7.5	8			
Feb. 2005	12.2	14.9	1.3	1.6	1.8	4.6	5.2	6.5	7.3	7.8			
March 2005	12.1	24	1.6	1.5	3.8	5.1	5.2	8.9	7.2	7.9			
April 2005	12.3	28.2	1.4	2.5	2.9	5.2	7.2	8.2	7.4	7.9	2.1	3	3
May 2005	12.1	12.5	1	1.3	2.1	4.5	5.7	6.4	7.3	7.7	3.2	4.2	4.2
June 2005	11.9	10	0.9	1.2	1.6	3	3.5	4	7.2	7.6	2.9	4.3	4.3
July 2005	11.8	10	0.9	1.3	1.5	4.8	5.2	6.3	7.2	7.6	7.9	11	11
Aug. 2005	11.6	8.8	1	1.3	1.7	5.3	7.4	8.5	7.2	7.6	21.9	28	28
Sept. 2005	11.2	7.8	1.3	1.5	2.5	5.7	7.7	8.1	7.2	7.5	12.7	22	19
Oct. 2005	11.5	25.4	1.9	2.5	3.7	6.6	7.6	9.9	7	7.8	25.5	50	50
Nov. 2005	11.7	23.5	1.8	2.3	4.9	7.1	8	10.6	7.2	7.9			
Dec. 2005	11.9	22.7	2.3	2.5	4.2	8.7	10.6	15.1	7.1	7.7			
Jan. 2006	12.3	30.1	1.6	2.2	2.8	5.5	6.8	7.8	7.2	7.7			
Feb. 2006	12.6	25.5	2.2	3.1	3.8	4.4	5.8	6.9	7	7.7			
March 2006	12.5	11.9	1.6	2.5	6.5	3	4.7	6.6	7.1	7.7			
April 2006	12	13.4	1	1.3	1.3	3.6	5.8	8.2	7.1	7.6	5.2	9	9
May 2006	12.2	16.1	1	1.2	1.4	3.6	4.3	4.8	7.3	7.8	6.1	10	10
June 2006	12.5	15.7	0.9	1.1	1.3	2.3	2.6	4.3	7.2	7.8	3.7	4.3	4.3
July 2006	12.6	12.7	1	1.1	1.3	3.1	3.5	4.2	7.2	7.6	6.5	22	22
Aug. 2006	12.7	10.1	1	1.1	1.6	4.5	5.6	8.3	7.2	7.7	18.1	24	24
Sept. 2006	12.8	9.5	0.9	1.1	1.4	4.8	7.3	8.1	7.1	7.6	15.8	24.9	24.9
Oct. 2006	12.4	13.6	0.7	0.8	1.2	2.4	2.4	5	7.4	7.8	7.7	12	12
Nov. 2006	12.4	17.6	0.8	1	1.1	4.4	4.8	5.5	7.6	7.9			
Dec. 2006	12	11.7	0.8	1	1.2	3.6	5.5	6	7.3	8			
Jan. 2007	11.6	16.2	1	1.6	2.5	3.6	5.2	7.2	7.4	7.9			
Feb. 2007	11	10.7	2.1	3.6	5.1	4.4	4.8	6.2	7.1	7.8			
March 2007	11.3	24.4	2.6	3.7	6.6	4.9	5.5	6.4	7.2	7.7			
April 2007	11.9	30.3	1.5	2.2	2.5	5.2	6.4	6.8	7.5	7.8	26.6	300	300
Min.	11	7.8	0.7	0.8	1.1	2.3	2.4	4	7	7.5	2.1	3	3
Max.	12.8	30.3	2.6	3.7	6.6	8.7	10.6	15.1	7.6	8	25.5	300	300
Average	12.0	17.1	1.3	1.8	2.6	4.6	5.7	7.2	7.2	7.8	11.1	35.2	35.0

Appendix B
2005-2007 Effluent Monitoring Data - Nitrogen

Date	Ammonia Nitrogen (April 1-April 30) (mg/l)			Ammonia Nitrogen (May 1-May 31)) (mg/l)			Ammonia Nitrogen (June 1-Sept.30) (mg/l)			Ammonia Nitrogen (Oct. 1-March 31) (mg/l)		TKN (mg/l)		Total Nitrite Nitrogen (mg/l)		Total Nitrate Nitrogen (mg/l)	
	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily
Existing Limits	**10**	**10**	**15**	**5.0**	**5.0**	**8.0**	**1.0**	**1.0**	**1.5**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
Jan. 2005										0.08	0.08	0.03	0.03	0.09	0.09	11.1	11.1
Feb. 2005										0.3	0.3	0.05	0.05	0.01	0.01	10	10
March 2005										0.14	0.16	0.09	0.09	0.06	0.06	11.5	11.5
April 2005	0.44	0.97	1.27									0.5	0.5	0.03	0.03	6.4	6.4
May 2005				0.04	0.05	0.06						0.6	0.6	0.01	0.01	13.3	13.3
June 2005							0.05	0.09	0.11			0.04	0.04	0.01	0.01	18.6	18.6
July 2005							0.04	0.05	0.06			0.04	0.04	0.01	0.01	17.8	17.8
Aug. 2005							0.04	0.06	0.06			0.05	0.05	0.01	0.01	16.2	16.2
Sept. 2005							0.06	0.07	0.08			0.08	0.08	0.01	0.01	16.6	16.6
Oct. 2005										0.04	0.04	0.07	0.07	0.01	0.01	16.8	16.8
Nov. 2005										0.04	0.04	0.08	0.08	0.01	0.01	9.9	9.9
Dec. 2005										0.48	0.48	0.28	0.28	0.04	0.04	9.4	9.4
Jan. 2006										0.26	0.26	0.1	0.1	0.06	0.06	11	11
Feb. 2006										0.56	0.56	0.3	0.3	0.01	0.01	8.3	8.3
March 2006										0.1	0.1	0.3	0.3	0.01	0.01	10.2	10.2
April 2006	0.09	0.2	0.34									0.3	0.3	0.05	0.05	11.4	11.4

Appendix B (continued)
2005-2007 Effluent Monitoring Data - Nitrogen

Date	Ammonia Nitrogen (April 1-April 30) (mg/l)			Ammonia Nitrogen (May 1-May 31)) (mg/l)			Ammonia Nitrogen (June 1-Sept.30) (mg/l)			Ammonia Nitrogen (Oct. 1-March 31) (mg/l)		TKN (mg/l)		Total Nitrite Nitrogen (mg/l)		Total Nitrate Nitrogen (mg/l)	
	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily
Existing Limits	**10**	**10**	**15**	**5.0**	**5.0**	**8.0**	**1.0**	**1.0**	**1.5**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
May 2006				0.05	0.09	0.12						0.03	0.03	0.01	0.01	12	12
June 2006							0.05	0.07	0.08			0.1	0.1	0.01	0.01	10.2	10.2
July 2006							0.04	0.06	0.04			0.1	0.1	0.01	0.01	15.6	15.6
Aug. 2006							0.04	0.05	0.05			0.29	0.29	0.01	0.01	14	14
Sept. 2006							0.05	0.07	0.07			0.65	0.65	0.01	0.01	13.5	13.5
Oct. 2006										0.04	0.04	0.1	0.1	0.01	0.01	13.7	13.7
Nov. 2006										0.03	0.03	0.1	0.1	0.01	0.01	11.6	11.6
Dec. 2006										0.02	0.02	0.1	0.1	0.01	0.01	13	13
Jan. 2007										0.03	0.03	0.1	0.1	0.02	0.02	10.5	10.5
Feb. 2007										0.02	0.02	0.2	0.2	0.01	0.01	11.1	11.1
March 2007										0.04	0.04	1.6	1.6	0.47	0.47	11.8	11.8
April 2007	0.16	0.35	0.41									0.14	0.14	0.15	0.15	9.2	9.2
Min.	0.09	0.2	0.34	0.04	0.05	0.06	0.04	0.05	0.04	0.02	0.02	0.03	0.03	0.01	0.01	6.4	6.4
Max.	0.44	0.97	1.27	0.05	0.09	0.12	0.06	0.09	0.56	0.56	0.56	1.6	1.6	0.47	0.47	18.6	18.6
Average	0.23	0.5	0.7	0.05	0.07	0.09	0.046	0.065	0.1	0.145	0.147	0.229	0.229	0.041	0.041	12.31	12.31

Appendix C
2005-2007 Effluent Monitoring Data – DO and Phosphorus

Date	Total Phosphorus (April 1-April 30) (mg/l)			Total Phosphorus (May 1-Aug. 30) (mg/l)			Total Phosphorus (Sept. 1-March 31) (mg/l)		DO (April 1-Oct.15) mg/l
	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Avg.Weekly	Max.Daily	Avg.Monthly	Max.Daily	Inst.Max
Existing Limits	**2.0**	**2.0**	**3.0**	**1.0**	**1.0**	**1.5**	**Report**	**Report**	**≥ 6.0**
Jan. 2005							0.74	0.74	
Feb. 2005							0.86	0.86	
March 2005							1.05	1.05	
April 2005	0.83	1.04	1.04						10.3
May 2005				0.81	0.85	0.86			10
June 2005				0.82	0.86	0.89			9
July 2005				0.87	0.91	0.97			8.6
Aug. 2005				0.86	0.97	1.03			8.1
Sept. 2005							0.85	0.85	8.3
Oct. 2005							0.82	0.82	7.5
Nov. 2005							0.67	0.67	
Dec. 2005							1.09	1.09	
Jan. 2006							0.83	0.83	
Feb. 2006							0.83	0.83	
March 2006							0.95	0.95	
April 2006	1.19	1.29	1.31						9.2
May 2006				0.78	0.91	0.94			9.9
June 2006				0.78	0.85	0.87			9
July 2006				0.86	0.93	0.95			8.1
Aug. 2006				0.86	0.93	0.97			7.9
Sept. 2006							1.32	1.32	8.8
Oct. 2006							0.99	0.99	9.1
Nov. 2006							0.76	0.76	
Dec. 2006							0.94	0.94	
Jan. 2007							0.92	0.92	
Feb. 2007							0.96	0.96	
March 2007							0.66	0.66	
April 2007	0.71	0.83	0.83						11.1
Min.	0.71	0.83	0.83	0.78	0.85	0.86	0.66	0.66	7.5
Max.	1.19	1.29	1.31	0.87	0.97	1.03	1.32	1.32	11.1
Average	0.9	1.05	1.06	0.83	0.90	0.94	0.90	0.90	9.0

Appendix D
2005-2007 Effluent Data – TRC, Metals, and WET

Date	Total Residual Chlorine (April 1-Oct.15) (mg/l)		Copper (µg/l)		Lead (mg/l) *1		Aluminum (mg/l) *1	Zinc (mg/l) *1	Whole Effluent Toxicity *1	
	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily			LC50	C-NOEC
Existing Limits	**21.6**	**37.4**	**16.7**	**24.9**	**Report**	**Report**	**Report**	**Report**	**≥ 100%**	**≥ 50%**
Jan. 2005			8.8	8.8						
Feb. 2005			10.2	10.2						
March 2005			6.8	6.8	0.01*	0.01*	0.180	0.026	≥100	100
April 2005	0	0	6	6						
May 2005	0	0	10	10						
June 2005	0	0	9	9	0.01*	0.01*	0.110	0.027	≥100	100
July 2005	0	0	14.5	14.5						
Aug. 2005	0	0	14.4	14.4						
Sept. 2005	0	0	15	15	0.01*	0.01*	0.230	0.022	≥100	100
Oct. 2005	0	0	15.3	15.3						
Nov. 2005			11	11						
Dec. 2005			15.1	15.1	0.01*	0.01*	0.400	0.027	≥100	75
Jan. 2006			11.7	11.7						
Feb. 2006			9.2	9.2						
March 2006			8.3	8.3	0.01*	0.01*	0.100	0.036	≥100	75
April 2006	0	0	7.9	7.9						
May 2006	0	0	13.4	13.4						
June 2006	0	0	4.8	4.8	0.01*	0.01*	0.100*	0.023	≥100	75
July 2006	0	0	12.4	12.4						
Aug. 2006	0	0	15	15						
Sept. 2006	0	0	15.8	15.8	0.01*	0.01*	0.410	0.026	≥100	75
Oct. 2006	0	0	10	10						
Nov. 2006			9.9	9.9						
Dec. 2006			12.7	12.7	0.01*	0.01*	0.140	0.010*	≥100	100
Jan. 2007			9.1	9.1						
Feb. 2007			12.8	12.8						

Appendix D (Continued)
2005-2007 Effluent Data – TRC, Metals, and WET

Date	Total Residual Chlorine (April 1-Oct.15) (mg/l)		Copper (µg/l)		Lead (mg/l) *1		Aluminum (mg/l) *1	Zinc (mg/l) *1	Whole Effluent Toxicity *1	
	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily	Avg.Monthly	Max.Daily			LC50	C-NOEC
Existing Limits	**21.6**	**37.4**	**16.7**	**24.9**	**Report**	**Report**	**Report**	**Report**	**≥ 100%**	**≥ 50%**
March 2007			11	11	0.01*	0.01*	0.230	0.027	≥100	75
April 2007	0	0	6.9	6.9						
Min.	0	0	4.8	4.8	0.01*	0	0.1		≥100	75
Max.	0	0	15.8	15.8	0.01*	0	0.41		≥100	100
Average	0	0	11.0	11.0	0.01*	0	0.211		≥100	86

* = Less Than

Note: 1. Lead, Aluminum, and WET test data are from quarterly WET test reports submitted by permittee.

2. On January 19 and 20, 2005, two 24-hour composite effluent samples were collected and analyzed for total polychlorinated biphenyls (PCBs) using EPA Standard Method 608. All of the results were below detection level. The data was submitted as an attachment to the permit attachment. In addition, eleven sludge samples were collected and analyzed for PCBs from 1995-2005 as part of the required priority pollutant scan. The sludge cake was analyzed for the presence of PCBs using EPA Method 8082. All of the sludge PCB sample results were below detection level.

Appendix E
Massachusetts POTW Discharges to the Housatonic River

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
MASSACHUSETTS					
Crane	MA0000671		3.100	8.200	212.003
Great Barrington	MA0101524	3.200	2.600	17.000	368.628
Lee	MA0100153	1.000	0.870	14.500	105.209
Lenox	MA0100935	1.190	0.790	11.800	77.745
Mead Laurel Mill	MA0001716		1.500	6.400	80.064
Mead Willow Mill	MA0001848		1.100	4.600	42.200
Pittsfield	MA0101681	17.000	12.000	12.400	1240.992
Stockbridge	MA0101087	0.300	0.240	11.100	22.218
West Stockbridge	MA0103110	0.076	0.018	15.500	2.327
Massachusetts Totals			**22.218**		**2151.386**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.